

CLAIM AMENDMENTS

In the claims:

[Method of Detecting Phycocyanin Algae or Bacteria from Reflected Light]

[General Measurement and Correlation/Estimation Method]

1. (Amended) A method of determining the [presence] amount of phycocyanin-pigmented algae or bacteria in water from light reflected therefrom, said method comprising the steps of:

- (a) obtaining a measurement of reflected light from said water, said measurement comprising a measurement of the respective amount of light in at least five [frequency] wavelength ranges: (i) from about 0.45 μm to about 0.52 μm (ii) from about 0.63 μm to about 0.69 μm ; (iii) from about 0.76 μm to about 0.90 μm ; (iv) from about 1.55 μm to about 1.75 μm and (v) from about 2.08 μm to about 2.35 μm ; and
- (b) [relating] determining the [approximate] amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water [to] from said respective amounts of light by applying an algorithm relating said respective amounts of light in said at least five [frequency] wavelength ranges to [the] said amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water.

2. (Amended) A method according to claim 1 wherein said measurement of the amount of light in said at least five [frequency] wavelength ranges comprises the measurement, respectively, of: (i) LANDSAT TM band 1, (ii) LANDSAT TM band 3, (iii) LANDSAT TM band 4, (iv) LANDSAT TM band 5 and (v) LANDSAT TM band 7.

3. (Amended) A method according to claim 2 wherein said algorithm is any algorithm selected from the group consisting of: $X \approx K_1 - K_2 \times (R31) + K_3 \times (R41) - K_4 \times (R43) - K_5 \times (R53) + K_6 \times (R73) - K_7 \times (R74)$ and equivalents wherein:

X is the [approximate] determined amount of [phycocyanin algae] phycocyanin-pigmented algae or bacteria expressed in micrograms per liter;

K_1 is a value in the range of from about 30 to about 60;

K_2 is a value in the range of from about 5 to about 15;

K_3 is a value in the range of from about 20 to about 35;

K_4 is a value in the range of from about 100 to about 130;

K_5 is a value in the range of from about 3 to about 10;

K_6 is a value in the range of from about 30 to about 50;

K_7 is a value in the range of from about 5 to about 20;

R31 is the value of the reflectance in LANDSAT TM band 3 divided by the reflectance in LANDSAT TM band 1, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R41 is the value of the reflectance in LANDSAT TM band 4 divided by the reflectance in LANDSAT TM band 1, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R43 is the value of the reflectance in LANDSAT TM band 4 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R53 is the value of the reflectance in LANDSAT TM band 5 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R73 is the value of the reflectance in LANDSAT TM band 7 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band; and

R74 is the value of the reflectance in LANDSAT TM band 7 divided by the reflectance in LANDSAT TM band 4, after subtraction [for] of the reflectance of atmospheric haze separately in each band.

4. (Amended) A method according to claim [6] 3 wherein:

X is the determined amount of [phycocyanin algae] phycocyanin-pigmented algae or bacteria expressed in micrograms per liter;

K₁ is a value in the range of from about 45 to about 50;

K₂ is a value in the range of from about 7 to about 11;

K₃ is a value in the range of from about 25 to about 35;

K₄ is a value in the range of from about 110 to about 120;

K₅ is a value in the range of from about 5 to about 8;

K₆ is a value in the range of from about 35 to about 45; and

K₇ is a value in the range of from about 10 to about 15[;].

5. (Amended) A method according to claim [6] 3 wherein:

X is the determined amount of [phycocyanin algae] phycocyanin-pigmented algae or bacteria expressed in micrograms per liter;

K₁ is a value in the range of from about 46 to about 48;

K₂ is a value in the range of from about 8 to about 10;

K₃ is a value in the range of from about 27 to about 30;

K₄ is a value in the range of from about 115 to about 120;

K₅ is a value in the range of from about 6 to about 8;

K₆ is a value in the range of from about 38 to about 43; and

K₇ is a value in the range of from about 13 to about 15[;].

6. (Amended) A method according to claim 1 wherein [the calculated value of phycocyanin] the determined amount of said phycocyanin-pigmented algae or bacteria

correlates to the actual [measured] amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water by a correlation value in excess of 60%.

7. (Amended) A method according to claim 1 wherein [the calculated value of phycocyanin] the determined amount of said phycocyanin-pigmented algae or bacteria correlates to the actual [measured] amount of said phycocyanin in said water by a correlation value in excess of 70%.

8. (Amended) A method according to claim 5 wherein [the calculated value of X] said determined amount of said phycocyanin-pigmented algae or bacteria correlates to the actual measured amount of said phycocyanin in said water by a correlation value in excess of 60%.

9. (Amended) A method according to claim 5 wherein the [calculated value of X] said determined amount of said phycocyanin-pigmented algae or bacteria correlates to the actual measured amount of said phycocyanin in said water by a correlation value in excess of 70%.

10. (Amended) A method according to claim 1 additionally comprising the step of transmitting data relating to the approximate amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria to a site remote from the site where said measurement takes place.

11. (Amended) A method according to claim 5 additionally comprising the step of transmitting data relating to the approximate amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water to a site remote from the site where said measurement takes place.

12. (Amended) A method of determining the [presence] amount of phycocyanin-pigmented algae or bacteria in water from light reflected therefrom, said method comprising the steps of

(a) obtaining a measurement of reflected light from said water, said measurement comprising a measurement of the respective amount of light in at least four [frequencies] wavelength ranges comprising, respectively: (i) LANDSAT TM band 1, (ii) LANDSAT TM band 3, (iii) LANDSAT TM band 5, and (iv) LANDSAT TM band 7; and (b) [relating] determining the [approximate] amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water [to] from said respective amounts of light by applying an algorithm relating said respective amounts of light in said at least [five] four [frequency] wavelength ranges to [the] said amount of [said] phycocyanin [algae or bacteria] in said water, wherein said algorithm is any algorithm selected from the group consisting of: $X \approx K_1 - K_2 \times (R_{31}) + K_3 \times (R_{41}) - K_4 \times (R_{43}) - K_5 \times (R_{53}) + K_6 \times (R_{73}) - K_7 \times (R_{74})$ and equivalents wherein:

X is the [approximate] determined amount of [phycocyanin algae] phycocyanin-pigmented algae or bacteria expressed in micrograms per liter;

K₁ is a value of about 48;

K₂ is a value of about 9;

K₃ is a value of about 30;

K₄ is a value of about 118;

K₅ is a value of about 7;

K₆ is a value of about 42;

K₇ is a value of about 15;

R31 is the value of the reflectance in LANDSAT TM band 3 divided by the reflectance in LANDSAT TM band 1, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R41 is the value of the reflectance in LANDSAT TM band 4 divided by the reflectance in LANDSAT TM band 1, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R43 is the value of the reflectance in LANDSAT TM band 4 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R53 is the value of the reflectance in LANDSAT TM band 5 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band;

R73 is the value of the reflectance in LANDSAT TM band 7 divided by the reflectance in LANDSAT TM band 3, after subtraction [for] of the reflectance of atmospheric haze separately in each band; and

R74 is the value of the reflectance in LANDSAT TM band 7 divided by the reflectance in LANDSAT TM band 4, after subtraction [for] of the reflectance of atmospheric haze separately in each band.

13. (Amended) A method according to claim [1] 12 additionally comprising the step of transmitting data relating to the [approximate] determined amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water to a site remote from the site where said measurement takes place.

14. (Amended) A method according to claim 12 additionally comprising the step of generating a report of [said approximate] the determined amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water.

15. (Amended) A method according to claim 12 additionally comprising the step of transmitting data relating to the [approximate] determined amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water to a site remote from the site where said measurement takes place.

[Measurement Method followed by Transmission to Remote Processing Site]

16. (Amended) A method of determining the [presence] amount of [phycocyanin algae] [phycocyanin] phycocyanin-pigmented algae or bacteria in water from light reflected therefrom, said method comprising the steps of:

- (a) obtaining a measurement of reflected light from said water, said measurement comprising a measurement of the respective amount of light in at least five [frequency] wavelength ranges: (i) from about 0.45 μm to about 0.52 μm ; (ii) from about 0.63 μm to about 0.69 μm ; (iii) from about 0.76 μm to about 0.90 μm ; (iv) from about 1.55 μm to about 1.75 μm ; and (v) from about 2.08 μm to about 2.35 μm ;
- (b) transmitting data relating to said measurement to a site remote from said measurement device; and
- (c) [relating] determining the [approximate] amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria expressed in micrograms per liter in said water [to] from said respective amounts of light at said remote site by applying an algorithm to determine the amount of said phycocyanin-pigmented algae or bacteria in said water [relating] from said respective amounts of light in said at least five [frequency] wavelength ranges [to the amount of phycocyanin algae in said water].

17. (Amended) A method according to claim 16 additionally comprising the step of generating a report of said [approximate] determined amount of said [phycocyanin] phycocyanin-pigmented algae or bacteria in said water.

18. (New) A method of determining the amount of phycocyanin-pigmented algae or bacteria in water from light reflected therefrom, said method comprising the steps of:

- (a) obtaining a measurement of reflected light from said water, said measurement comprising a measurement of the respective amount of light in at least two of the following wavelength ranges: (i) from about 0.45 μm to about 0.52 μm (ii) from about 0.63 μm to about 0.69 μm ; (iii) from about 0.76 μm to about 0.90 μm ; (iv) from about 1.55 μm to about 1.75 μm and (v) from about 2.08 μm to about 2.35 μm ; and
- (b) determining the amount of said phycocyanin-pigmented algae or bacteria in said water from said respective amounts of light by applying an algorithm relating said respective amounts of light in said least two of said wavelength ranges to said amount of said phycocyanin-pigmented algae or bacteria in said water.

19. (New) A method according to claim 18 wherein said algorithm comprises a quantitative relationship between the ratio of the amount of light in a first of said wavelength ranges to the amount of light in a second of said wavelength ranges, and the amount of said phycocyanin-pigmented algae or bacteria in said water.

20. (New) A method of determining the amount of phycocyanin-pigmented algae or bacteria in water from light reflected therefrom, said method comprising the steps of:

- (a) obtaining a measurement of reflected light from said water, said measurement comprising a measurement of the respective amount of light at three wavelengths; and
- (b) determining the amount of said phycocyanin-pigmented algae or bacteria in said water from said respective amounts of light by applying an algorithm relating said respective amounts of light in said three wavelengths to said amount of said phycocyanin-pigmented algae or bacteria in said water.

21. (New) A method according to claim 20 wherein said algorithm comprises a quantitative relationship between the sum of (1) the ratio of the amount of light at the first of said wavelengths to the amount of light at the second of said wavelengths and (2) the ratio of the amount of light at the second of said wavelengths to the amount of light at the third of said wavelengths; and the amount of said phycocyanin-pigmented algae or bacteria in said water.

SPECIFICATION AMENDMENTS

On page 6, line 7, please delete the word “frequency” and replace it with the word – wavelength--.

On page 6, line 10, please delete the word “frequency” and replace it with the word – wavelength--.

On page 6, line 20, please delete the word “frequency” and replace it with the word – wavelength--.

On page 7, line 2, please delete the word “frequency” and replace it with the word – wavelength--.

On page 7, line 5, please delete the word “frequency” and replace it with the word – wavelength--.

On page 10, line 8, please delete the word “frequency” and replace it with the word – wavelength--.

On page 10, line 14, please delete the word “frequency” and replace it with the word – wavelength--.

On page 10, line 16, please delete the word “frequency” and replace it with the word – wavelength--.

On page 13, line 8, please delete the word “frequencies” and replace it with the word – wavelengths--.

On page 13, line 15, please delete both occurrences of the word “frequency” and replace both with the word –wavelength--.

On page 13, line 16, please delete both occurrences of the word “frequency” and replace both with the word –wavelength--.

On page 13, line 18, please delete the word “frequencies” and replace it with the word –wavelengths--.

On page 13, line 21, please delete the word “frequencies” and replace it with the word –wavelengths--.

On page 14, line 9, please delete both occurrences of the word “frequency” and replace both with the word –wavelength--.

On page 14, line 15, please delete both occurrences of the word “frequency” and replace both with the word –wavelength--.

On page 14, line 21, please delete the word “frequencies” and replace it with the word –wavelengths--.

On page 14, line 23, please delete the word “frequencies” and replace it with the word –wavelengths--.

On page 15, line 4, please delete both occurrences of the word “frequency” and replace both with the word –wavelength--.

On page 20, line 11, please delete the word “frequencies” and replace it with the word –wavelengths--.

In the Brief Description of the Drawings on page 15, immediately below the heading, please insert:

–The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.--.

DRAWING AMENDMENTS

Please replace Figures 1, 6 – 8 and 11 – 14 with the replacement sheets provided herewith. A Petition under 37 CFR 1.82 to accept these drawings is included herewith.